

Claims

I claim:

1. A balustrade structure combination comprising:

5 a balustrade product having a molded housing and an insert member secured in the molded housing to form a plurality of holes extending through the molded housing, the insert member comprising a plurality of supports having openings and a plurality of pipes extended through the openings of the plurality of supports, each of the plurality of supports being spaced apart longitudinally relative to one another
10 along the length of the plurality of pipes, the plurality of supports having a circumferentially spaced plurality of tabs at an outer diameter of each support, the plurality of tabs radially sized to extend to an outer portion of the molded housing; the plurality of pipes being positioned in parallel relation to one another and in parallel relation to a longitudinal axis of the balustrade product;

15 a support structure; and

connecting means for releasably connecting the balustrade product to the support structure.

2. The balustrade structure combination of claim 1, wherein the support
20 structure has a receiving hole and the connecting means includes a connecting rod adapted to be recessed into one of said plurality of holes of the balustrade product

with one end of the connecting rod being releasably engageable into the receiving hole of the support structure.

3. The balustrade structure combination of claim 2, wherein the connecting rod
5 has a spring operatively connected thereto, said spring on the connecting rod acting to keep a predetermined portion of the connecting rod protruding from the molded housing, whereby when said connecting rod is pushed into said molded housing the spring acts to push the predetermined portion of the connecting rod from the molded housing allowing the one end of the connecting rod to releasably engage the
10 receiving hole of the support structure when aligned therewith.

4. The balustrade structure combination of claim 1, wherein the molded housing is formed of a synthetic material composition.

15 5. The balustrade structure combination of claim 2, wherein each of the plurality of holes at opposite ends of the balustrade product has a connecting rod and spring recessed therein.

6. The balustrade structure combination of claim 1, wherein the balustrade
20 product has a blank hollow cylinder formed therewithin.

7. The balustrade structure combination of claim 1, wherein the insert member is made of a synthetic material composition.

8. A balustrade product comprising:

5 an elongated molded housing formed of a synthetic material; and

an insert member embedded within the molded housing to form a plurality of holes extending longitudinally through the molded housing, the insert member comprising a plurality of supports having openings and a plurality of pipes extended through the openings of the plurality of supports, each of the plurality of supports
10 being spaced apart longitudinally relative to one another along the length of the plurality of pipes, the plurality of supports having a circumferentially spaced plurality of tabs, the plurality of tabs radially sized to extend to an outer portion of the molded housing, the plurality of pipes being positioned in parallel relation to one another and in parallel relation to a longitudinal axis of the balustrade product.

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9. The balustrade product of claim 8, further comprising a connecting rod adapted to be recessed into one of said plurality of holes of the balustrade product, the connecting rod having a spring operatively connected thereto, said spring on the connecting rod acting to keep a predetermined portion of the connecting rod
20 protruding from the molded housing, whereby when said connecting rod is pushed into said molded housing the spring acts to push the predetermined portion of the connecting rod from the molded housing.

10. The balustrade product of claim 9, wherein each of the plurality of holes at opposite ends of the balustrade product has a connecting rod and spring recessed therein.

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11. The balustrade product of claim 8, wherein the molded housing has blank hollow cylinder formed therewithin.

12. The balustrade product of claim 8, wherein the balustrade product is formed at a molded length with a desired length of being cut from the molded length.

13. The balustrade product of claim 12, wherein an end surface of the balustrade product is perpendicular to the longitudinal axis of the balustrade product.

14. The balustrade product of claim 12, wherein an end surface of the balustrade product is cut to desired angle relative to the longitudinal axis of the balustrade product.

15. A balustrade connecting pin used in connecting a rail of a balustrade to a support structure, the connecting pin being constructed to be recessed into a prealigned hole at an end of the rail to enable the connection of the rail to a complementary aligned hole in the support structure, the connecting pin comprising:

a rod and a spiral spring, said spiral spring having an uncompressed length less than the length of the rod, said spiral spring having a diameter larger than a diameter of the rod and being positioned about the rod, said spiral spring having a stop tightly secured at a bottom edge of a first end to prohibit the rod from passing
5 past the first end of the spiral spring but allowing the rod to freely slide within the diameter of the spiral spring, the diameter of the spiral spring being less than a diameter of a prealigned hole at the end of a rail to allow the spiral spring to freely move within the prealigned hole, said spiral spring having a flange at a second end, said flange having a diameter greater than the diameter of the prealigned hole at the
10 end of the rail, whereby when said rod is pushed into the prealigned hole the flange prohibits an upper portion of the spiral spring from being pushed into the prealigned hole and the stop on the spiral spring acts to stretch the spiral spring within the prealigned hole, the rail can then be aligned with a complementary aligned hole in a support structure and a spring load from the stretched spiral spring acts to forces a
15 portion of the rod to engage with the complimentary aligned hole, thereby connecting the rail of the balustrade to the support structure.

16. A method for producing a synthetic stone rail article by centrifugal molding in the form a balustrade product containing holes and including a rotatable
20 centrifugal mold having an upper half and a lower half together defining a inner cylindrical surface defining a cavity shaped to form the balustrade product and with

the cavity being adapted to receive a slurry of synthetic stone material composition,
the improvement comprising the steps of:

assembling an insert member by extending a plurality of pipes through a
plurality of openings in a plurality of supports and spacing the supports at

5 longitudinally spaced intervals relative to one another along the length of the
plurality of pipes, circumferentially spacing a plurality of tabs about an outer
diameter of each support radially, and sizing the plurality of tabs for engaging the
inner cylindrical surface of the mold consequently positioning the pipes in parallel
relation to one another and in parallel relation to a center axis on the mold;

10 setting said insert member into the lower half while the mold is in an open
state with the plurality of supports being arranged perpendicular to a longitudinal
axis of the mold and the plurality of pipes being arranged parallel with the
longitudinal axis of the mold;

pouring a predetermined amount of the slurry of synthetic material
15 composition into said lower half of said mold and closing the mold halves;

tightening the mold halves in a closed state and thereby pressing the tabs on
the insert member against the cylindrical inner surface of the mold and also thereby
positioning the pipes centrally to the mold halves;

rotating, the elongated tubular mold on its generally longitudinal axis causing
20 said slurry of synthetic material composition to acquire the form of the inner
cylindrical surface within said mold in response to the rotation of the mold and
resultant centrifugal force, the predetermined amount of slurry of synthetic material

composition becomes distributed in said cavity and coacting with the cylindrical inner surface to form a balustrade product with the insert member integral with the balustrade product;

- 5 solidifying said slurry of synthetic material composition in said mold such as to form a blank hollow cylinder within the balustrade product;
- separating the upper and the lower halves of the mold; and
- removing the balustrade product.

10 17. The method in claim 16, wherein the mold is made from a an extruded aluminum, the plurality of supports are made from the slurry material composition and the plurality of pipes are made from a PVC material.

- 15 18. A method for centrifugal molding a balustrade product comprising the steps of:
- providing a mold for producing the balustrade product, the mold having an inside mold surface defining a mold cavity, the mold having an upper and lower half;
- providing a plurality of insert members to define a plurality of open spaces in the interior of the balustrade product;
- placing said insert member into the lower half while the mold is in an open
- 20 state;
- pouring a slurry material composition into the open lower half;
- tightening the upper and lower half in a closed state;

rotating the mold generally about a longitudinal axis;
allowing the slurry material composition to solidify; and
removing the balustrade product from the mold.

5 19. The method of claim 18, wherein the mold being made of a an extruded
aluminum, the centrifugal mold having an upper half and a lower half together when
in a closed state defining a inner cylindrical surface defining a cavity shaped to form
the balustrade product and with the cavity being adapted to receive a slurry of
synthetic stone material composition.

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20. The method of claim 18, further comprising the step of grinding the outer
surface of the balustrade product after removing the balustrade product from the
mold to remove any surface imperfections resulting from the use of the mold.